Theses / Stellingen

Belonging to thesis / Behorend bij het proefschrift

Mechanism of Genome Protection by Homologous Recombination Repair

A single molecule DNA-protein interaction study

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1. Proteins that regulate RAD51, the catalytic core of homologous recombination, are key to understanding how strand exchange is controlled. To understand how recombination mediators regulate RAD51, one must first understand how RAD51 performs strand exchange.
   This thesis

2. RAD51 nucleation and extension rates are 2 – 3 orders of magnitude faster on single strand DNA than on double strand DNA – providing a DNA substrate selection mechanism intrinsic to RAD51.
   This thesis

3. The C-terminal RAD51 interaction domain of breast cancer 2 susceptibility protein reduces RAD51 filament assembly rates on dsDNA in a concentration dependent manner.
   This thesis

4. Studies of a subject can be limited by the discipline used. Combining different disciplines provides more information and better understanding. For the best result all disciplines need to be respected equally.
   This thesis

5. Work with BRCA2 peptides suggests a mode of disrupting filament formation that can inhibit homologous recombination, which can possibly be applied in anti-cancer/tumor treatments.
   A. Carreira et al., Cell 136, 1032 (2009)

6. The human Adenovirus or Adeno- associated viruses are used as vectors in gene-therapy, vaccines and anti-cancer treatments. Cancer cells often over-express characteristic receptors on their surfaces. Viral vectors can be re-targeted to such cells by genetically modifying them. Ideally, the capsid protein conferring cell type specificity (fibre) is changed (*Vaccine 2007 May 10; 25 (19): 3809-15*). Alternatively the minor capsid protein pIX is a good platform for re-targeting constructs.
   J. Vellinga (2006). *Functional and applied studies on the adenovirus minor capsid protein pIX.* Ph.D. Thesis. Leiden University: The Netherlands

7. Gene-therapy can be inefficient or unsafe, if a patient has developed anti-vector immunity by previous exposure to the virus the gene therapy vector is based on. Cross-species permissiveness of chimpanzee-based Adenoviruses vectors would allow their use as gene-therapy vectors avoiding the host immune responses due to previous exposure to human Adenovirus infections.
   Adapted from Dr. A. Nicosia, CSO at Okairos AG, Basel, Switzerland / Pomezia, Italy); vaccinenation channel October 21st, 2011
   (http://www.youtube.com/user/vaccinenation#p/search/0/bZ3wwQLH6mY)

8. The co-expression of viral suppressors of RNA interference in cell lines used for Adenovirus production increases virus titers. Therefore suppressors of RNA interference render vaccine production more cost effective.
   Virol J. 2011; 8: 13.

9. Neutrinos do not travel faster than photons.

10. “Memory and soul are identical”.
    Umberto Eco, reading at Cologne, Octorber 17th 2011

11. “Vita sine litteris mors” ('Life without learning is death')
    Adapted from Seneca, Epistulae morales 82